Organizational Results Research Report
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FREIGHT Development
Missouri's Economy in Motion

The Economic Value of Investment in Freight Transportation: Missouri Rail

MoDOT

MISSOURI DEPARTMENT OF ECONOMIC DEVELOPMENT
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FREIGHT Development — Missouri's Economy in Motion

Economic Impact Summary

California and Knob Knoster Rail Siding Extension Projects

As part of the effort to increase efficiencies for both the Amtrak passenger train and the Union Pacific commercial shipping trains, the Missouri Department of Transportation has chosen to extend rail sidings in two areas along the Union Pacific KC-STL line. These sidings were chosen based on a marginal cost to benefit analysis from a previous MoDOT study entitled "Missouri Freight and Passenger Rail Capacity Analysis.[1]" Investment for the two projects will cost an estimated $12 million, split between Missouri dedicated funds and federal grant funding.

The California siding would be 2-3 miles and reduce delay for Union Pacific by an estimated 2.6 minutes per train and Amtrak by 8.5 minutes per train. The Knob Knoster siding would be 2 miles and reduce delay for Union Pacific by an estimated 1.8 minutes per train and Amtrak by 4.5 minutes per train.[2] Total delay reductions to Union Pacific are expected to be over 733 hours per year, resulting in an estimated payroll savings to the company of over $146,578.[3]

20-YEAR ECONOMIC IMPACT

	Benefit Ratio	20-Year	
NET GENERAL REVENUE	0.20 : 1.00	$2.000	million
PERSONAL INCOME	8.02 : 1.00	$80.222	million
VALUE-ADDED / GSP	9.59 : 1.00	$95.931	million
ECONOMIC OUTPUT	16.71 : 1.00	$167.103	million

The delay reductions would potentially allow an additional 252 westbound trains per year to move through the area given the same time constraints.[4] Assuming a similar market share of Missouri-based Union Pacific customers using the westbound line, approximately 3.6%, this allows an added 72,953 tons of cargo to be shipped by train per year to Missouri importers and by Missouri exporters.[5] Those industries that typically ship by rail will be able to increase their rail shipments and take advantage of the added rail capacity and shipping cost savings by offloading fewer products to trucks. The estimated production cost savings to these industries is over $4.7 million per year.[6]

Over twenty years, the construction of the sidings along with the production cost savings to Missouri industries will return an estimated $2 million in net general revenues. The two projects will generate $80.2 million in new personal income to Missourians; $95.9 million to the Gross State Product; and $167.1 million in total economic output. The projects will also generate an annual average of 87 jobs over the twenty year period at average wages of $32,400.[7]

Methodology

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California and Knob Knoster Rail Siding Extension Projects

[1] Missouri Transportation Institute and Missouri Department of Transportation, "Missouri Freight and Passenger Rail Capacity Analysis", Organization Results Research Report, July 2007; OR08.001. This report provides the marginal cost to benefit analysis for potential locations of siding extensions; time improvements are expected to be similar to those projected in the UP capacity study for similar sidings in the same general area.

[2] The Missouri Transportation Institute provided data on Union Pacific and Amtrak delay reductions for each of the proposed siding extensions. The reduced delay is based on simulation from a prior study; time improvements are expected to be similar to those projected in the UP capacity study for similar sidings in the same general area. The data is based on 2005 freight scheduling and does not account for potential logistic efficiency improvements.

[3] The Missouri Transportation Institute provided data on the number of trains and cars by type of cargo shipped along the affected westbound portion of the Union Pacific STL-KC line based on 2005 freight scheduling. Rail crew costs of $175 per hour of operation per train are based on two prior studies Rail Short Haul Intermodal Corridor Case Studies, Foundations for Intermodal Research and Education, March 2003 and Mid-Atlantic Rail Operations Study *Interim Benefits Assessment*, I-95 Corridor Coalition, February 2004. These studies were also cited in the Guide to Quantifying the Economic Impacts of Federal Investment in Large-Scale Freight Transportation Projects, U.S. Department of Transportation, October 2006.

[4] Rail operation hours prior to delay reductions from the siding extensions were held constant. The additional number of trains is computed by applying the ratio of the current number of trains that operate yearly on the Missouri Union Pacific line and their travel time and distance adjusted by the reduction of delay; to the rail travel time and distance prior to siding extension construction.

[5] Total tonnage of rail freight shipments on the Union Pacific line was estimated using train and car load data from the Missouri Transportation Institute and Average Loaded U.S. Railcar Weight for Selected Commodities data from the Association of American

Railroads, Railroad Facts (Washington, DC: 2001 and 2002 issues). 1991 data—U.S. Department of Transportation, Bureau of Transportation Statistics, calculations based on Association of American Railroads, Railroad Ten-Year Trends 1990–1999 (Washington, DC: 2000). The Missouri percentage of total tonnage was estimated using data from the Freight Analysis Framework V2.2, U.S. Department of Transportation, 2006. Missouri tonnage included westbound shipments of Missouri origin with destinations greater than or equal to 500 miles; and Missouri destination shipments from Eastern origins greater than or equal to 500 miles. Origins and destinations were also analyzed further to determine the likelihood that the Union Pacific STL-KC line was used; outliers were omitted from the total Missouri tonnage.

[6] Production costs savings are in the form of shipping savings; increased rail capacity is assumed to be filled by typical rail shipping customers transferring shipping from truck to rail due to cost savings by the rail mode. This approach is used in the Guide to Quantifying the Economic Impacts of Federal Investment in Large-Scale Freight Transportation Projects, U.S. Department of Transportation, October 2006. The term "typical rail shipping customers" includes those industries shipping by rail through Missouri according to the Freight Analysis Framework V2.2, U.S Department of Transportation, 2006. Shipping cost savings were determined after reviewing the following sources: Mid-Atlantic Rail Operations Study *Interim Benefits Assessment*, I-95 Corridor Coalition, February 2004; Freight Cost per Ton-Mile tables, U.S. Department of Transportation, 2006; Quick Quote Review, FreightCenter.com, 2008; and UPRR-Price Inquiry Published Rates, uprr.com. It was determined that the previous studies varied from 3.5 cents between mode shipment cost differences to 22 cents. Much of the data was based on information prior to 2005 and did not include projections that reflected current fuel pricing increases. Through research of current published rates of shipping by rail and trucking, mode cost differences range among commodity types from 12 cents to 24 cents. The current published rate was assessed to be an appropriate measure as being within a reasonable range compared to previous studies. Shipping costs were applied by respective industry tonnage.

[7] Impacts were estimated using the Regional Economic Models Incorporated (REMI) Policy Insight Module, Version 9.